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THE NEW YORK
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RUFUS PORTER, EDITOR.

TERMS.—$2 a year—$1 in advance, and the remainder in 6 months.

☞ *See Advertisement on last page.*

I LOVE A LAUGH.

I love a laugh, a wild, gay laugh,
Fresh from the fount of feeling,
That speaks a heart enshrined within,
Its joy revealing.

I love a laugh—a wild, gay laugh;
Oh! who would always sorrow,
And wear a sad and mournful face,
And fear the morrow!

I love a laugh; it cheers the heart
Of age, bowed down by sadness,
To hear the music in the tones
Of childhood's gladness.

I love a laugh; this world would be
At best a dreary dwelling,
If heart could never speak to heart,
Its pleasures telling.

Then frown not at a wild, gay laugh,
Or chide the merry hearted—
A cheerful heart and smiling face
Can ne'er be parted.

WORDS OF CHEER.

Be firm and be faithful;
Desert not the right;
The brave become bolder,
The darker the night!
Then up and be doing,
Though cowards may fail;
Thy duty pursuing,
Dare all, and prevail!

If scorn be thy portion,
If hatred and loss,
If stripes and if prison,
Remember the cross!
God watches above thee,
And he will requite;
Desert those that love thee,
But never the right!

TO YOUNG MEN.

Young man in broadcloth sleek and fair,
With shining whiskers and long hair,
With vest so white, and boots so bright,
Beware.
The goblet sparkles fair and bright,
And give the joy you feel to-night;
Give it a throw, and let it go,
To-night.

The yawning pit gaps wide for you,
And demons try what they can do
To draw you in, through thick and thin—
'Tis true.
O! cheat the devil of his prey,
By throwing ardent drinks away;
With all your might—then all is right,
To-day.

When this you cheerfully have done
Go straight enjoy your mirth and fun;
But keep away from ruin, I say,
From Rum.
But when the tempter comes so sly,
And on you fixes that red eye,
And says 'tis good—I wish you would
Beware.

ASHWELL'S REVOLVING BOILER.

FIGURE 1.

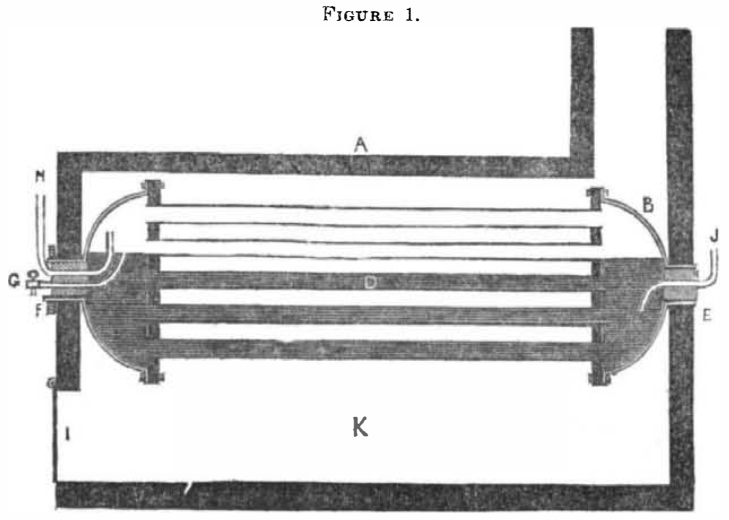


FIGURE 2.

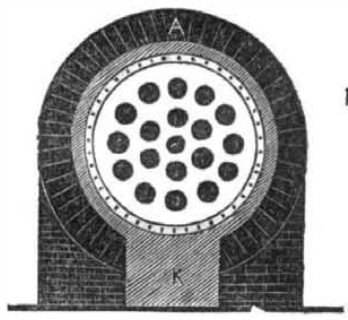
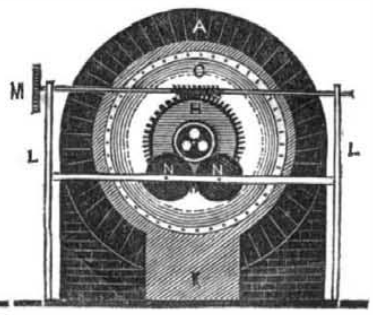


FIGURE 3.



INTRODUCTION.—Most of our readers, even practical engineers, will be struck with the novelty of this invention, and some may quaintly enquire whether the engine stands still or is dispensed with, seeing the boiler itself is a rotary. Well, we should not wonder if the next improvement should unite the boiler and engine in a single machine; but in this case the boiler is made dependent on the engine, or some other power, for its own motion, which is produced for the purpose of preservation of the boiler, which would be otherwise liable to injury. The inventor, Mr. Thomas Ashwell, of Stockbridge, Mass., has had one of them in operation, and is satisfied that it produces much more power in proportion to the expense of fuel, and the space occupied, than any other kind in use.

EXPLANATION.—Fig. 1, is a longitudinal section of the boiler and the brick casing A, in which it is enclosed. The boiler consists of a series of horizontal iron tubes D, secured at each end in cast iron discs (originally cast upon the tubes by a peculiar process) and to the rim of each is attached by rivets or screw bolts the flange of a convex head B, from the centre of which projects a tubular pivot E, by which the boiler is supported on its bearings. These pivots are about six inches in diameter (for a boiler 7 feet long) and within each pivot is a stationary core or centre piece, through which pass the feeding pipe J, guage pipes G, and steam pipe H: the cores being packed to fit the pivots steam tight. On one of the pivots is a screw-wheel, the teeth of which take to the worms of a screw shaft as shown M, fig. 3, and by which the boiler is put in motion, of one revolution per minute. Fig. 2 is a transverse section, showing the brick arch casing by which the boiler is enclosed: a section of the boiler presenting one of the discs with the tubes, and the furnace or fire chamber K, below. Fig. 3, is a view of the front end of the boiler with its core, perforated for three pipes (steam pipe and two guage pipes) with the screw-wheel H, and the screw C, and the friction wheels on which the pivot rests. The brick arch work presents the escape by radiation, of the heat, while the surface of each tube is subjected to its action. One end of the boiler is a little elevated to enable the steam to escape with facility, and the uppermost tubes, being above the surface of the water, serve as channels for the steam, but are not kept out of water long enough to get highly heated: and by their constant change of position, are kept from incrustations or sediment. The inventor has extended his plan to a guage dial and index: but that should be the subject of another description. He intends to apply for a patent as soon as he has sufficiently matured and proved the invention.

The Young Prussian.

Frederick, king of Prussia, one day rang his bell, and nobody answering, he opened his door and found his page fast asleep in an elbow chair. He advanced towards, and was going to awaken him, when he perceived a letter hanging out of his pocket. His curiosity prompting him to know what it was, he took it out and read it. It was a letter from this young man's mother, in which she thanked him for having sent her a part of his wages to relieve her misery; and finished with telling him that God would reward him for his dutiful affection. The king, after reading it, went back softly into his chamber, took a purse full of ducats, and slipped it with the letter into the page's pocket. Returning to the chamber, he rang the bell so loudly that it awakened the page, who instantly made his appearance. "You have had a sound sleep," said the king. The page was at a loss how to excuse himself; and putting his hand into his pocket by chance, to his utter astonishment he there found a purse of ducats. He took it out, turned pale, and looking at the king, shed a torrent of tears without being able to utter a single word. "What is that?" said the king; "what is the matter?" "Ah! sire," said the young man, throwing himself on his knees, "somebody seeks my ruin! I know nothing of this money which I have just found in my pocket!" "My young friend," replied Frederick, "God often does great things for us, even in our sleep. Send that to your mother; salute her on my part, and assure her that I will take care both of her and you"

The census of St. Louis recently taken, exhibits an increase of 11,568 souls during the past two years.

LIST OF PATENTS

Issued from the United States Patent Office, for the week ending 27*th of March*, 1847,

To Lawrence Holmes, of Andover, Mass., for improvement in the Jacquard Looms. Patented March 27, 1847.

To Alfred W. Forwood, of Scott Co., Kentucky, for improvement in Carriages. Patented March 27, 1847.

To John H. Fellows, of Cincinnati Ohio, for improvement in Furnace Grate Bars. Patented March 27, 1847.

To Alfred Newton, Lucius B Smith, and Elias Sanford, of Meriden, Conn., for improvement in Augurs. Patented March 27, 1847.

To Joseph C. Strode, of East Bradford Pa., for improvement in the Hydraulic Ram. Patented March 27, 1847.

To Noah C. Byram, of Boston, Mass., for improvement in Twine Stands. Patented March 27, 1847.

To Charles Galvani, of New York, for improvements in the Rotary Steam Engine, (hav assigned his right, title and interest to John Clark of N. York.) Patented March 27,1847.

To Lewis Kirk, of Reading. Penn., for improvement in the Cross cut Steam Saw. Patented March 27, 1847.

To Lemuel W. Wright, (residing in London England), for improvement in making paper. Patented March 27, 1847.

To Elhanon W. Thomas, of Chicago, Illinois, for improvement in Ditching machines.—Patented March 27, 1847.

To Walter Harris, of Augusta, Georgia, for improvement in finding the direction of streams for deepening channels. Patented March 27, 1847.

Improvement in Etiquette.

Several gentlemen of the Massachusets Legislature dining recently at a Boston Hotel, one of them asked Mr. M., the gentleman who sat opposite, "Can you reach them *pertaters*, sir?"

M. extended his arm toward the dish and satisfied himself that he *could* reach the *pertaters*, and answered,

"Yes sir."

"And will you stick my fork into one of 'em?" asked the Rep.

"O, certainly," said Mr. M., as he took the fork, carefully stabbing it into the potatoe, where he left it.

At this the Rep was somewhat vexed, and asked, rather tartly—

"Will you pass me my fork?"

"Ah!—your fork!—yes—oh, yes sir?"—and taking hold of the fork, he drew it from the potatoe and passed it back to the Rep, whose nerves seemed not a little shocked.

"Waiter!—*waiter!* I say!"—cried the Rep,—"will *you* pass the pertater! I've been tryin' for half an hour to get one, and if you don't pass 'em along purty sune, I'll report your conduct to my constiterwents!"

"Fashionable" Infirmities.

On churching a titled lady and leader of *ton* a tuft-hunting clergyman is said to have emulated other pretended reformers of the Book of Common Prayer, and essayed a polite "adaptation" of its serious and solemn ritual: "O Lord, save *this woman*, Thy servant," by substituting "save *this lady*, Thy servant;" while the conceited clerk, determined not to be outdone in sycophantish politeness, gravely interjected the response, "who putteth her [*ladyship's*] trust in Thee."

Too Rich by Half.

The infant Don Maria, son of Don Carlos, born March 13, 1822, will, it now seems arranged, marry the Arch Dutchess Maria Beatrix D'Este, born February 18, 1824. They have between them a fortune of a hundred millions of florins ($48,000,000.)

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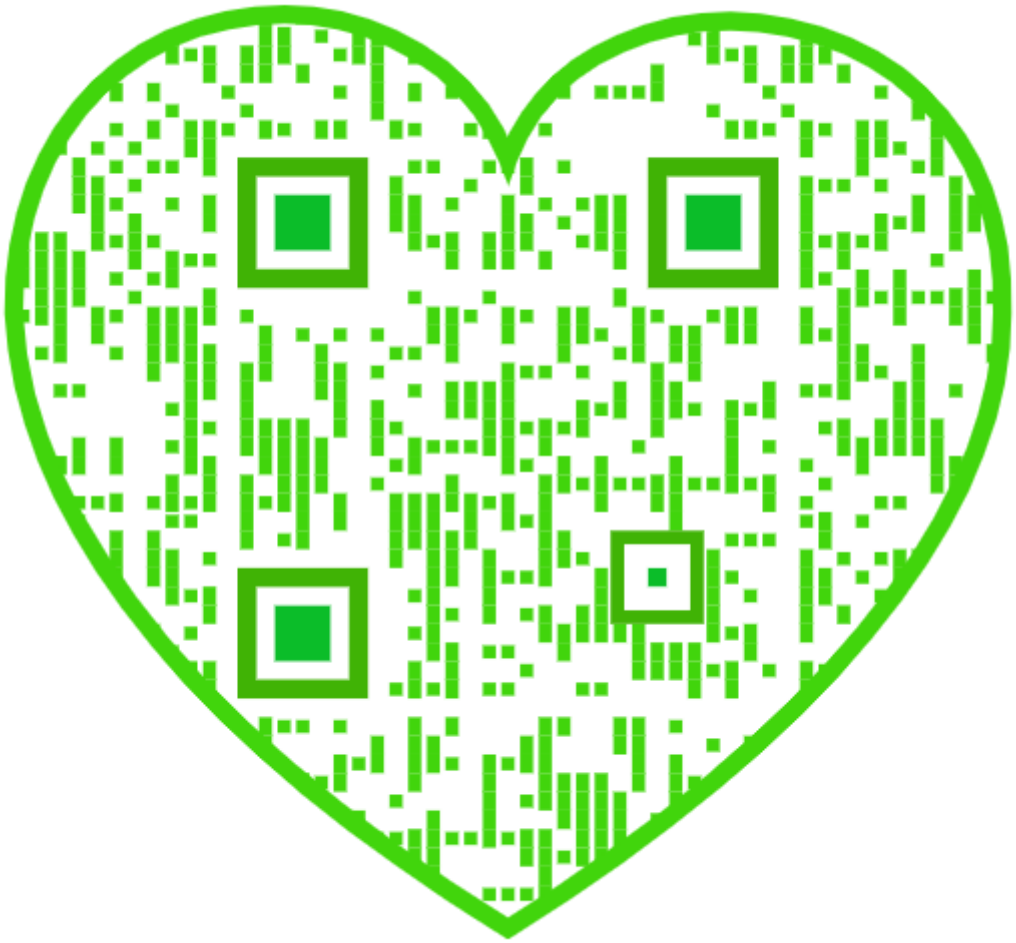

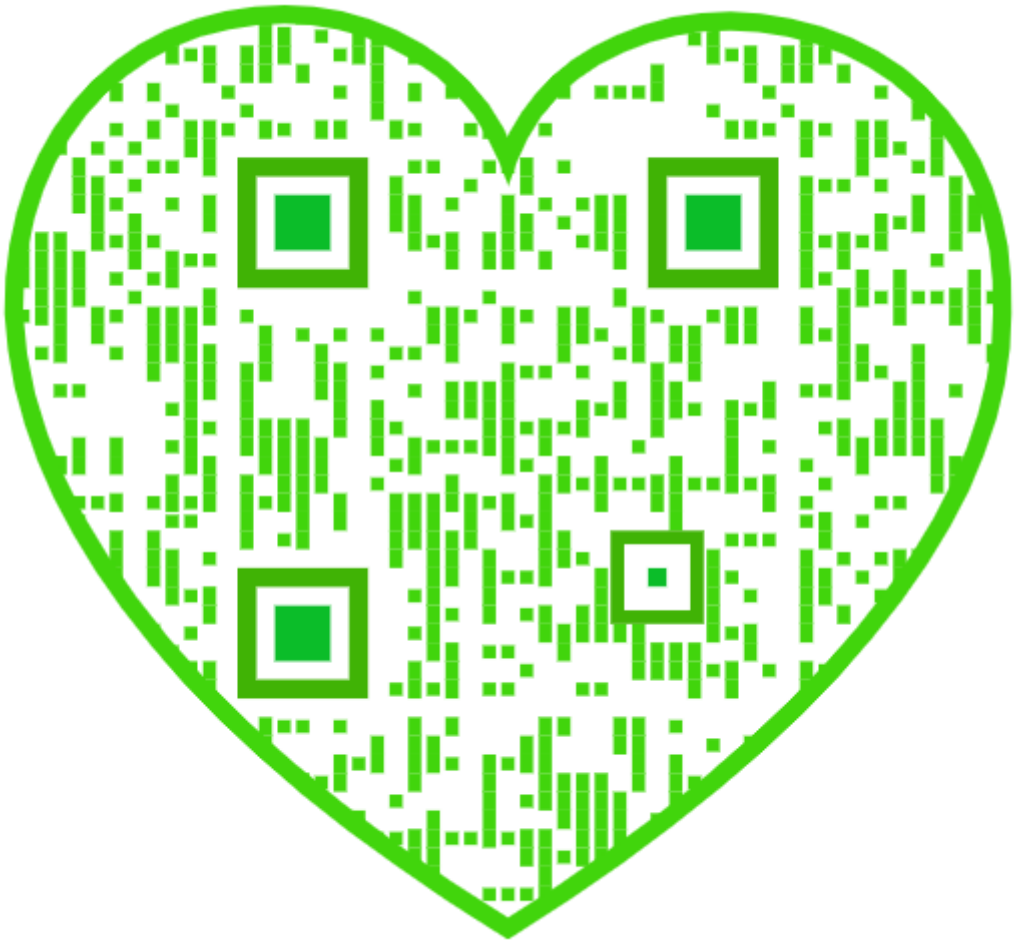

Recent Fires.

Since our last notice of fires, we have heard of an extensive conflagration at Towanda, Pa., by which many houses, stores, &c. were destroyed, loss amounting to $80,000.

At Newport Village, Me., the extensive tannery owned by Mark Fisher, together with a chair factory—loss $20,000.

In North Blenheim, N. Y, the dwelling house of Mr. H. A. Holdridge,—five children perished in the flames, and the sixth and only surviving one, was badly if not fatally burned.

In West Cambridge, Mass., a large barn belonging to Mr. J. Hill.

In Bridgewater, Mass., Perkins & Co.'s extensive iron works.

At Vergennes Falls, Vt., two large mills—loss $12,000.

At Brimfield, Mass., a congregational church —loss $6000.

At Medford, Mass., a sawing and planing mill owned by Joseph James. Loss $8000.

At Watervliet, N. Y., the buildings of the U. S. Arsenal.

At Philadelphia, a large factory on Second street—$40,000.

At Killingly, Ct , a large cotton factory.

At Alton, N. H., the sash and blind factory of James Twombly—loss $4000.

At Cincinnati a destructive fire has occurred, which destroyed several of the finest stores in the city

In Hiram, Me , a dwelling house owned by a Mr. Foster.

At Cumberland, Md., a steam saw mill and sash factory—loss $15,000.

At Columbus, Ga., an extensive conflagration has occurred, destroying nearly twenty houses, shops, &c. Loss $50,000.

On Martha's Vineyard, a fire in the woods has extended over a tract of more than seven miles of valuable ship timber.

At Cape Elizabeth, Me., the public house known as the Cape Cottage, with adjoining buildings—loss supposed $6000.

At Wilmington, Del., the steam saw mill of Mr. John Waller.

At Hobart, N. Y., the satinett factory of Booth & Co.—loss $20,000.

At Lorsdale, R. I., an extensive bleaching establishment.

At North Bridgewater, Mass., the shoe manufactory, store and dwelling house belonging to Mr. George Clark.

Another great fire has occurred at Columbus, Ga., by which was destroyed, among other property, 1280 bales of cotton. Loss estimated at $60,000.

At Alexandria, Ky., about one fourth of the village has been destroyed.

Reprehensible If True.

It is stated in an exchange that the American Tract Society have expended $42,000 in the erection of a building for its own conveniences We cannot possibly see the propriety of such an investment. It appears on the same principle, as the funding of its capitol, made up of the contributions of its friends, and applying only the *interest* instead of the principal, to the object for which it was intended. There is not one in a thousand of the contributors who would be satisfied with this disposition of the funds contributed. This money should be applied more directly to the publication and distribution of books, merely paying rent for such buildings as are necessary for business operations. The fact is, too many people have such an adoration of the capital of this world, that when it gets into their hands they cannot bear the idea of letting it go out again. If we have done injustice by these remarks, we shall cheerfully make due correction.

The Astor House.

Gen. Scott and suit, while at Brazos Santiago, lodged in a place called the Astor House, which consists of the wreck of a Mississippi steamer, laying half in the water and the rest imbedded in the sand The fare was $3 per day.

Jumbic.

The Great Western steamship is to be sold by auction next month. She is now lying in the floating harbor in Bristol.—George Munday, the hatless prophet, is lecturing in Philadelphia.—In St. Petersburg, where the population is about 480,000, one quarter only of the inhabitants are females.—Since the late conflagration in Boston, $5103 has been distributed to the sufferers by that disaster.—Why is a young lady learning her lesson like a disagreement ? Because she's a Miss Undestanding.—The value of fox skins taken in Maine is about $10,000 annually.—The Queen of Spain has conferred upon her chief physician Don Pedro Castello, the singular title of Marquis of Health.—One thousand acres of land in Warren county, Tennessee, sold last week at Boston for 20 cents an acre.—Always be as witty as you can with your parting bow—your last speech is the one remembered.—A clothier in Baltimore appends to his advertisement this N. B. " money extracted without pain." —Before the caterpillar hangs down to rise a butterfly, it eats 500 times its own weight.—One of the mountains in the moon is discovered to be 17,000 feet in height. They are generally about 5000 feet.—There are 100,000 Roman Catholics and 20.000 Jews in London. —In 1814 a bull which killed a man in France was sentenced to be hung. Parliament confirmed the sentence.—The celebrated Smithson once analysed a lady's tear ! He caught the pearly treasure as it fell from its source, and on submitting it to the tests discovered that it contained two separate salts. —It is said that a cubic inch of rotten stone contains on an average 41,000 animalcules.

Alleviatory Consideration.

To those who are unsuccessful in business, and are subjected to painful sensations on account of their inability to pay small bills when presented, or to relieve the pressing wants of their poor creditors, or avoid the insolence of the rich ones, it may be some alleviation to know that these very painful sensations, have a salutary influence on their hearts, and a direct tendency to capacitate them for more brilliant sentiments and a greater degree of enjoyment, than they could have had without these preparatory exercises.

Effects of the Famine.

An agent of the Society of Friends, who has recently travelled in the southern and western parts of Ireland, gives a heart sickening account of the dismal state and appearance of that country. He says the face of the country is greatly changed ; every living thing but man has disappeared ; no dogs, cats, pigs nor poultry are seen, and there is no playing of children in the streets. The people have a sickly hue, and are becoming estranged from each other, in many cases not recognizing their former acquaintances and neighbors. Some have estimated the deaths at 1500 daily, principally by starvation.

A Scene, not in the Bills.

The Pittsburg (Penn.) Journal says, that in the theatre of that city on Friday night, two boys, or rather young men, were fighting in the pit. The mother of one of them was seated in the boxes, and on seeing her son struck by his opponent, leaped from the boxes into the pit, notwithstanding the efforts of those around to prevent her. She fell with her chest across one of the pit benches, but immediately sprung up again, notwithstanding she must have been badly hurt, and rushed like a tigress on her boy's antagonist.

The Illuminated Sun.

We have received a copy of this splendid postscript, and was astonished at the indicatious of enormous expense of engravings, contained in its vast pages. We shall not attempt a description, but believe it will be admitted by all, that it has not been equalled by any pictorial work published in this city. The sheet is of the bed-blanket size, and published monthly at the Sun Office ;—$1 per annum.

J. B. Gough.

This champion of Temperance has proved exceedingly popular at Albany and Troy, having had a long succession of crowded houses. On one evening, given for the benefit of the suffering Irish, he realized $127, from the sale of tickets.

A Curious Spring.

There is a great natural curiosity in Delaware county, Ohio. The manner of discovery is thus related: Some time about the year 1818, two men, by the names of Davis and Richards, salt boilers by profession, commenced boring for salt water in the bed of the Scioto river, near the place mentioned. After having bored about 20 feet through a solid rock, they came upon a stream of white sulphur water, of the strongest kind. The augur with which they were boring suddenly sunk something like two feet, which is probably the depth of the stream—but such was the pressure of the water that the augur was forced up again, and large weights had to be attached to it in order to keep it to its place and enable them to bore further. They continued to bore on, however, until they got about 400 feet below the sulphur stream, when they struck upon salt water. The size of the augur was about 2 1-2 inches in diameter.— When they took it out, the jet of the sulphur water rose up to the height of 20 feet above the surface of the river. In order to obtain access to the salt water beneath, they procured a strong copper pipe and attempted to force it down to the place where it was to be found.— But whenever it reached the sulphur stream, such was its force and pressure, that the pipe was completely flattened, so as entirely to prevent the passage of water through it. All subsequent attempts to insert a pipe proved abortive, and after prosecuting the work at intervals for several years, the project was entirely abandoned. After enlarging the orifice made by the augur, at the top, a wooden stock, 20 feet in height, was inserted—yet even at the top of this, such was the force of the stream, that it required the strength of two or three men to put a plug in it. From this stock, a pipe conveys the water to the spring house, on one of the bluff banks of the river. The stream has been running for 26 years, yet its strength and force are unabated. Those who have recently examined it, say that it is capable of throwing up a stream ten inches in diameter, from 80 to 90 feet high; and that water can be thus obtained to turn a large mill —*Gem of Science.*

The Telegraph Lines.

We need not inform our readers that another storm, nearly unparalleled in violence, raged on the Atlantic coast on Saturday last, because they have all heard of or experienced it; so we let that pass But about the telegraph lines we will say, that since the introduction of magnetic telegraph lines, no event has occurred so discouraging to the enterprising proprietors thereof, as the destruction and prostration of their posts and wires occasioned by the late storm. From New Brunswick, N. J. to Philadelphia,—about 50 miles,—there were very few posts left standing. Many were broken off above the ground. But the circumstances were extraordinary, and would not be likely to occur again in a hundred years, if ever. The sleet ice is said to have accumulated on the wires to the thickness of an inch : and when some of the posts, being loosened by the rain, had fallen, their tendency was to break down the next, by straining on the wires. It has ever appeared to us, a better policy, to use shorter posts, and more of them to the mile. By doubling the ordinary expense of erection, they will be permanent and safe.

New Works.

We have received from the author, E. H. Dixon, M. D., of this city, two valuable works on the human system. One of them is dedicated particularly to the male youths of our land, and gives a free exposition of their frailties with their results and tendencies. And the other is addressed to the other sex, showing the physiology of their system, and giving much important advice as to the proper mode of training up children, with remarks upon the absurdities of the usual custom, &c., &c. We take pleasure in recommending these works to the public who will find in them a treaties on the peculiarities of our physical system, written in such a style as not to be offensive to the most modest reader, while every youth can understand its meaning.

They are for sale by Chas. Ring, corner of Broadway and John sts.

Fanny Ellsler is married! Her husband's name is Monzani ; he is a dancer.

ARMY NEWS.

The most recent reports from Gen. Taylor's army (by way of the Brazos and New Orleans) is that the Americans were attacked by the army of Santa Anna, at the pass beyond Saltillo; when after a severe engagement, General Taylor retreated in good order, fighting constantly by the way for two days when he reached Monterey, after which he turned the assault upon the Mexicans, and with his 20 pieces of flying artillery, pursued them from hill to hill for 18 miles. Loss reported, 1100 Americans, and 4000 Mexicans. Numbers engaged, Americans 5000, Mexicans 18,000.

There is a rumor via Havana, that both Vera Cruz and the Castle had surrendered without opposition. Not credited.

P. S.—Since the above was put in type, more recent and authentic intelligence has been received, by which it appears that Gen. Taylor did not retreat to Montery, but maintained his position at Buena Vista, a few miles beyond Saltillo. Santa Anna retreated to the pass of Augua Neuva. Reported loss 4000 Mexicans and 600 Americans.

Capt. Kidd's Treasure Found!

A letter from Mr. J. Bradley, at Caldwell's Landing, announces that on renewing the search last week with the diving bell, about 100 yards south of the coffer dam, they brought up a cup and fourteen bars of silver, and a box containing antique jewels, set with diamonds and other precious stones, the whole valued at over $100,000.

The king of Bavaria is supposed to be insane, having fallen desperately in love with a Spanish dancing girl and on desiring to bestow upon her a title and the domains of the crown his ministers resigned.

Food riots have occurred in Switzerland and other parts of the continent, where the poor are suffering from the high prices of grain and provisions.

Her Majesty of England has graciously consented to the appointment of a *day* of fasting and prayer; but the day had not been fixed upon at the last dates received.

The export of specie from England to the United States continues to attract attention. It amounted to about $18,000,000 during the four months ending with February.

It has been ascertained that the Irish men and women in this city, have within the year past, remitted to Ireland the astonishing sum of $808,000.

A would-be prude remarked one day in the hearing of Mdlle. Dejazet, "I am very particular about my reputation." "You are always particular about trifles," replied Dejazet.

The cost of a bomb shell of large size, is said to be about four dollars. Some hundreds of thousands of them have been ordered for the present year.

The Society of Friends in England have contributed to the relief of the suffering poor in Ireland, the liberal sum of £35,000, or $170,-000.

Political papers are complaining that of 184 officers recently appointed, 130 are from the slave states. We think it would be just as well to appoint them *all* from the South.

On Friday morning last, about 10 o'clock, a man at work on the farm of Mr. Reeve, near Woodbury, N. J., was struck by lightning and instantly killed.

The fare on the Philadelphia, Wilmington and Baltimore railroad has been reduced. The price of passage in the first class cars is now $3, and in the second class $2.

A proposition is before the Massachusetts Legislature to establish a State Asylum for inebriates. A State Penitentiary for inebriate-makers should also be established.

The papers report the marriage in Vermont, of a Mr. Pye to Miss Pumpkin. The story was probably invented by some squash editor

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THE WEATHER, &c.

WEDNESDAY, MARCH 24th.

	HOURS, A. M.									HOURS, P. M.									
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Therm.	—	—	35	35	43	41	42	43	45½	45½	47	47	46	43½	41½	38	37	35	34
Wires,	—	—	49½	49½	50	52	53	53	53½	54½	55	55	54	52½	52½	49½	48½	48½	48

[*Equilibrium continued*

THURSDAY, 25th.

Therm.	—	—	32	35	41	43½	46½	50	53	55½	58	60	60	58	56	54	54	52	—
Wires,	—	—	47	49	54	56	58	60	63	65½	68	69	68	67	65	62½	63	62	—

FRIDAY 26th.

Therm.	—	42	40½	41	41½	44	45	46	47	47½	46½	45	44½	44½	44	41½	40	—	—
Wires,	—	50	49	50	51½	53½	54	54½	54½	54	53	52	52	52	51	50	50	—	—

SATURDAY, 27th.

Therm.	—	34	32½	32	32	31	31½	33	34	34½	34	33	32½	32	32	32	31	30	28½
Wires,	—	48½	48	48	48	48	48	50	50	50	50	49	48½	48	48	48	48	47	46½

[*Equilibration commenced.*

SUNDAY 28th.

Therm.	—	24	24	26	28	32	34	—	—	38	38	39½	39½	37½	36	34	33	30	32
Wires,	—	46½	46½	47	48	51	52	—	—	53	53	53	53	51	49½	48	47	47	48

Equilibrium ended.

MONDAY 29th.

Therm.	—	32	32	33	36½	39½	41	44	45	47	50	52	53½	52½	51	49	48½	47	43½
Wires,	—	49	49	50	52½	53½	54	55	55½	57	59	60	61	60	58	55½	56	54	51

TUESDAY, 30th.

Therm.	—	—	27	27½	30	31½	33½	35	36	37	39	38	37	35	34	33½	33½	34	34
Wires,	—	—	45	46	49	50	51	51	52	52	53	51	50½	48½	48	48	49	49½	49½

REMARKS.

Wednesday, March 24.—Morning clear.—Equilibration of the wires which commenced at past 6 last evening, terminated at 10 min. before 8 this morning, after more than 12 hours duration. At 50 min. past 7 A M. thermometer 36, at 8—ten minutes after, 43, being a rise of seven degrees in ten minutes; rise of wires half a degree. At 15 min. past 8, thermometer 39 1-2, wires 51, being a fall of 3 1-2 degrees of the thermometer in 15 minutes and a rise of the wires one degree. At 8.30 thermometer 40, wires 50 1-2, being a rise of half a degree in thermometer and a fall of half a degree in the wires. Chain clouds made their appearance in the high atmosphere and exhibited an excited state. This struggle in the atmosphere was wonderful and is most distinctly marked.

Thursday 25th. The wires reached the great height of 69, a result of yesterday's struggle, at 10 minutes to 8, A. M. Friday, 26. Last night the wires vibrated 12 degrees, and the thermometer fluctuated but 10 degrees during the same time. At 11 A. M., a man working on a farm near Woodbrige, New Jersey, was killed by lightning—a span of horses he was driving was also killed at the same time Heavy thunder and vivid lightning at Philadelphia this day, hour not stated. Snow commenced falling at Albany at 3 P. M., and continued till 11 A. M., Saturday, during which time 18 inches of snow fell. At 15 minutes past 12 M., Rain commenced falling freely at Brooklyn, and continued till midnight—and then snow came down and was of the depth of 2 inches. At 6 on Saturday snow re-commenced, and continued till 11 A. M. At 2 and 3 P. M., great numbers of Robbins and Blue birds visited Trinity Church Yard in New York. Sunday March 28, Greenwood Cemetery, which contains within its enclosure 242 acres was visited by thousands of Robbins, Blue birds, Snow birds, a striped bird which is the summer yellow bird with its winter coat on, Sparrows—and a few brown swamp birds and woodpeckers. The Robbins appeared hungry, and fed on the Sumac berry, the other birds fed upon the ground. The Sparrows were in single pairs and mated, the other birds were in flocks. The yellow birds were so tame as to come within three feet of me when I held out my hand with seed to feed them. I feed the wild birds during inclement weather at Greenwood, and for several years have fed Sparrows and snow birds in great numbers at my residence, and while I write this notice both sparrows and snow birds are feeding within four feet of my window. Greenwood is a fit place for the birds to congregate. Sunday was a bleak and chilling day, as I stood near the sylvan waters of this city of the dead, the wind came in furious blasts—and was vocal—as it passed thro' the tops of the weeping willows and among the branches and tendrils that were hanging like living drapery above the water a soft sound issued from the tender branches as they cut the wind with their wiry tendrils when moving to and fro on the wings of the swift zephyrs—it was instructive to listen to the music of the weeping willow in this city of the dead.

This snow storm it will be seen commenced in lightning, and the lightning was no doubt, the off-spring of a terrestrial convulsion.

E. MERIAM.

Lightning.

COMMUNICATED BY E. MERIAM, ESQ.

(*Concluded from No.* 27.)

Many persons entertain the opinion that iron is dangerous on account of its attracting the lightning—the fact that persons on board of steamboats or in ware houses of iron are never killed by lightning, and that great guns, anchors, chain cables, &c., on board ships of war never diverts the lightning from the little rod on which it descends to the water, is conclusive as to this point.

In my numerous lightning investigations, the following facts appear, viz:

First. A thunder bolt often separates into numerous little bolts. Sometimes this separation takes place before it reaches an object on the earth's surface, and at other times it separates inside of dwellings and other buildngs after it has entered, and the track that it leaves shows where this separation took place and if it divided into two or more parts. The lightning passes in round bodies, as the hard substances it passes through presents a round hoe. In tin it breaks the metal and does not leave a round perforation.

Second. In tin spouts to buildings it always takes the inner surface, and if a bend at the lower extremity in a heavy rain obstructs the water so as to fill that portion of the spout, it will break through the tin and in doing so appears to take a new direction, flying off horizontally, and sometimes enters dwellings that would not have been visited but for the obstruction of the spout by water.

Third. The lightning sometimes descends in a perpendicular line, and at other times takes a line inclined several degrees from the perpendicular, this is apparant from the position of Silicious lightning tubes formed in sand banks struck by lightning, these are sometimes several feet in length; the lightning meeting with resistance in the dry sand fuses it, and when cold it presents a hollow tube—These tubes have been in several instances dug up.

Fourth. Persons struck down by lightning are frequently recusciated by having cold water thrown upon them. This should be done in all cases of prostration by lightning.

Fifth. Lightning will pass over the surface of glass plates covered with quicksilver without in the least injuring the covering or the glass unless there are obstructions to cause the lightning to explode.

Sixth. The telegraph wires are frequently struck during thunder storms, but I have seen no record of the fusing of the wires by the lightning.

Seventh. Lightning appears to traverse the surface of metals and not in the body of the metal.

It is from the records of facts that we are to determine the habits and disposition of the lightning. I have visited numerous places struck by lightning and have made numerous records of these examinations. One of which I made in 1845 developed an extraordinary fact, and one of great importance. A building was struck by lightning in Pearl Street, New York, a house adjoining this buildin had a cupola and was ten or more feet hig than the building struck, the lightning st on the comb of the roof which was c with zinc, followed this to a metal gu the gutter to the spout and down the inside of the spout to within ten feet of the pavement, here was a bend in the spout which obstructed the free delivery of the water, there the lightning exploded and one portion of it entered the store on the ground floor, and lit upon the gas pipe, melted it, and set the gas on fire and there became extinguished. A person setting within three feet of the pipe at the time extinguished the flames. I examined the pipe a few hours after. Fears have been expressed as to danger of gas pipes from lightning by persons using gas fixtures. The testimony of the lightning in this case seems to be conclusive. I have already made these remarks lengthy without getting through with what I have to say under this head.

er
ruck
apped
ter, and

Austin's Perpetual Motion.

(*Continued from No.* 27.

A bag made of India rubber cloth, having the form of a meal bag, is used in each end of each tube. The diameter of the bag is equal to the diameter of the inside of the part of the tube where it is used. The open end of the bag is fastened to the inside of the tube so that the water cannot pass between the outside of the bag and the inside of the tube. When the bag is extended at full length, the other reaches far enough toward the end of the tube to allow C to bear on the end of the tube when necessary. Each C is fastened to the outside of the closed end of a bag. The only use of a the bag is to prevent the water rising above C. The open end of the bag is nearly seven feet from the end of the tube. In order that this bag may not be injured by the pressure of the water and other weights, the vacancy between the inside of the tube and C, is as little as it can be and allow C to pass up and down without being impeded in its course by rubbing too hard against the tube. The open end of the bag is fastened to the inside of the tube with a strong steel spring, made and bent in the form of a common barrel hoop. This spring is put inside of the bag, near the open end. The ends of the spring pass by, and touch, each other. The elasticity of the spring causes all parts of it to press the bag hard against the tube. Oakum and pitch, or tar, are put between the outside of the bag and the inside of the tube, opposite the largest edge of the hoop spring. Also, if necessary, between the inside of the bag and the hoop spring. The bag may be fastened to the tube by other methods. When F is in the position represented by fig. 1, the whole weight borne up by it is nearly 240 lbs. It is necessary, therefore, that the weight of D, and of all the water above the lower part of F, which gives to F an upward pressure, should be, at least, a little more than 240 lbs. I have supposed a cubic foot of fresh water to weigh nearly 60 lbs., and a column nearly 34 feet in height, and 1 foot square. to be equal to the pressure of the atmosphere upon a square foot of surface. I have supposed this column to weigh nearly 2016 lbs. The natural pressure of the atmosphere is taken from F. Consequently, the pressure of this column of water upon F, causes the air in it to retain its usual bulk and density. Now, when this column of water presses upon F, and, at the same time, the upper C presses upon the column of water, as the weight of C and of the column of water is equal, it is evident that the air in F will be pressed so as to be of nearly twice its usual density, and of course, of nearly half its usual bulk, making it nearly 2 cubic feet. For the sake of brevity in expression, let us signify the preponderance of the impulsive, over the opposing power. The quantity of water, sufficient to fill the space in the tube occupied by F in fig. 1, is nearly 4 cubic feet. This water weighs nearly 240 lbs. Suppose E to weigh nearly 240 lbs. Suppose it to be half a cubic foot, 12 inches long, 12 wide, and 6 thick, and one of its largest sides joining the upper part of F, so as to bring the centre of it one fourth of a foot from F. By doing this we raise nearly 240 lbs., 2 1-4 feet higher in the tube than this weight would be, if it were made of water, and the water should occupy the space which F now occupies. Suppose also that C and C, and the chain be removed from the tube, and all the space in it be occupied by water, except the space occupied by F and E. Now, it is evident, when the tube is in this situation that by half a revolution of the wheel, the tube will give power which is X during said half a revolution, equal to the perpendicular descent of nearly 240 lbs., two times 2 1-4 feet, which is 4 1-2 feet.

Let us see if the tube in fig. 1, which has just been here described, will not give by half a revolution of the wheel more X, during said half a revolution, than it would in this supposed case.

E is now nearly 120 lbs., K is equal to nearly 60 lbs. more placed at E, making nearly 180 lbs. K weighs nearly 120 lbs. When the wheel performs a quarter of a revolution, K is brought near to E, and continues there during the next quarter. Of course, nearly 120 lbs. operating at E during a quarter of a revolution, is equal to nearly 69 lbs. operating at E during half a revolution. While the wheel is performing the last half of the half revolution, F is compressed by the pressure of G, the upper D, and the upper C. During this compression G and D descend in the tube near two feet, and give power, which is X during a quarter of a revolution, equal to nearly 60 lbs. placed at E. C also descends in the tube the same distance, and gives power which is X, during quarter of a revolution, equal to nearly 60 lbs. placed at E. 60 and 60 lbs. added to nearly 180 lbs. make nearly 300 lbs. This weight placed at E, will give by half a revolution of the wheel, power which is X, during said half a revolution, equal to the perpendicular descent of nearly 300 lbs. 4 1-4 feet.

(*To be continued.*)

THE SONG OF SPRING.

(ORIGINAL—BY J. A. G.)

I come with beauty and around me fling,
Flowers of beautiful hue,
And with the green briar the birds I bring,
Blending beauty and harmony too.
Beauty and harmony the angel bands,
Seem nearer the earth than ever,
They kiss the earth with intertwined hands
As though they would leave it never.

I come rejoicing and with me bring
Joy to the maiden's heart;
My harp in my hand and from each string
Angelic harmonies part,
And joy, pure joy, I diffuse o'er the earth,
Gladdening the hearts of men,
The smiles that are giv'n are reflections of heav'n,
Where beauty and joy have their birth.

But faint are these scenes compar'd to those
Which triumph o'er death and the tomb,
Where the river of peace, joy and harmony flows,
And flowers perpetual bloom.
Then may each say when comes the spring,
These flowers to man are given
To cheer his heart while on the way
To the glories and joys of heaven.

The Emperor Alexander.

When on the eve of his journey to Tagonrog, where he died, the Emperor Alexander said to a benevolent English gentleman,—whom he had for years honored with his confidence, "Do you think that any man, however exalted in station or distinguished for philanthropy, can be safe in resting on any other ground for salvation but a humble reliance on the perfect, all-sufficient atonement of his crucified Redeemer?" "Certainly not, sire," was the unhesitating reply. "That is my opinion," said the Emperor: 'and I try daily to realize it. I have no other hope; it is my only comfort."

Pretty Well Up.

The shipwrights and caulkers at Boston, struck on Monday last for higher wages. They have heretofore received $2,50 per day, and now demand $3. One or two of the employers have acceded to the terms of the workmen.

Great Britain possesses the sovereignty of forty colonial governments. The yearly cost of these colonies to the mother country is £3,171,646, of which £2,630,804 3s., is for naval and military purposes.

It is said that, after all, Louis Philippe has been cruelly taken in, in the affair of the Montpensier marriage, the dowry of the bride being only 30,000,000 Spanish reals, instead of as many francs, in other words, £30,000 instead of £1,250,000.

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NEW INVENTIONS.

Important Discovery.

A new mode of producing the oxygen and hydrogen gasses, for the Drummond light, and for other purposes.

An English chemist, Mr. Grove, has just observed a fact, as interesting in a chemical point of view as worthy of interest from its practical application. It is known that water is composed of two gases—oxygen and hydrogen—combined, the proportion of one volume of the first, to two volumes of the second. It is also known that the most intense heat is obtained from burning hydrogen with pure oxygen, and that if those engaged in the physical sciences do not make use of it oftener than they do, it is on account of the complicated and expensive nature of the processes required to produce these gases. Thanks to Mr. Grove we may hereafter, without any other apparatus than a small tube of platina, which will never wear out, for it is perfectly unalterable, and without any other material than distilled water, procure indefinitely a mixture of oxygen and hydrogen, in the proportions in which they are found in water. Heat a platina tube with a simple spirit-lamp, cause a current of steam to pass through it, this will be decomposed and transformed integrally into its gaseous elements, which being conducted into a narrow tube, may be ignited as they escape from it. It is to be well understood that if the tube is not sufficiently contracted at its extremity, explosion will take place. Mr. Grove recommends the use of such water only as has been deprived of salt by distillation, and of air by previous ebullition. If it be desired to obtain, instead of a continuous current of oxygen and hydrogen, a given quantity of these bodies, it is then only necessary according to Mr. G., to introduce under a bell (receiver) full of distilled water, carried to the temperature of 93 deg., (centigrades,) a platina wire terminating in a button, and intensely heated. The water becomes instantly decomposed, and the gases are collected in the receiver.

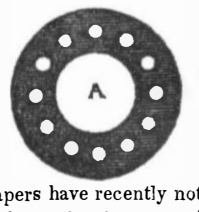
Combination Table.

Our readers may suspect, by this title, that the article to which it refers is something like a multiplication table; but such is not the fact—the article in question being a *kitchen* table, though it must be admitted that it embraces a multiciplicity of conveniences, among which are a revolving knife, grinding and scouring apparatus, consisting of a grind stone, two emery wheels; a rotary brush for lustreing plate; a coffee mill; spice mill; apple-parer; mortar and pestle, and a chopping or mincing bowl and chopping knife operated by machinery. These different sections of machinery are connected to a main shaft, (from which they may be occasionally disconnected) to be put in operation by a hand crank or treadle; the shaft being furnished with a regulating fly wheel. The inventor is Mr. Wm. F. Liddle of Rochester, N. Y. But whether he has ever put the combined apparatus in actual operation, we are not informed.

Improvements in the Steam Engine by Dr. Haycraft.

The intention of Dr. Haycraft's improvements in the steam engine is to save fuel, by use of what he calls anhydrous, or perfectly dry steam. He has found that three conditions are necessary completely to effect this object; first, that the steam should be separated from the water of ebullition, or priming, before leaving the boiler; secondly, that it should pass through a tube, or tubes, surrounded by steam of a somewhat higher temperature, which the inventor calls a siccator; and, thirdly, that the working cylinder be also surrounded by steam of a somewhat elevated temperature. The two last conditions are easily effected by throttling the steam before it enters the siccator which supplies the engine. A low pressure engine which drives a flour mill has been altered on this principle, and it has been ascertained that the consumption has been diminished from seven to four pounds for each bushel of flour ground. As, however, the adaptation of these three particulars is attended with inconsiderable expense, the inventor has been induced to try the effect of using only what he calls a priming chest, which fulfils the first condition, viz: that of separating the steam from the priming. This apparatus has been introduced into the *Lady of the Lake*, one of the Iron Steamboat Company's vessels, with a tubular boiler, and the machinery by Penn. It produces a saving, as ascertained by the difference of temperature of the hot well, of one-sixth, with an increase of speed. The engines work more steadily, and the boiler is not required to be blown out but once weekly, instead of thrice. The inventor supposes the priming chest to be especially adapted for locomotives for the prevention of priming; he considers that priming takes place in an insensible manner in all boilers, even in those cases in which there is no ordinary evidence of it. The principle on which the steam is separated in Haycraft's priming chest, consists in causing the steam to reverbrate several times in an apparatus similar to what is used in purifying gas, while the water separated is drained off by pipes. He has given 14 different forms in which it may be constructed, one of which somewhat resembles Seward's separator.

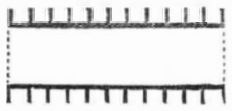
Fitzgerald's Cannon.



Several papers have recently noticed a new invention in the mode of constructing cannon of wrought iron in a manner to be occasionally intersected, so as to be portable; but the invention has been generally attributed to a wrong name; and so imperfectly described that few people would know any thing of the peculiar construction. It consists of a series of circular perforated plates, similar to that represented in this cut, A being the calibre of the gun. These plates are of the best wrought iron, 1-4 to 1-2 inch thick, with well planished faces, and being arranged in contact, are connected together by wrought iron rods or bolts, passing through the holes near the periphery; the bolts having strong heads at one end, and a screw nut at the other, whereby the plates are firmly held together. Several of the plates at the breach are, of course, solid, and without the calibre in the centre. This series being thus connected, they are bored and polished inside, and turned off to the proper shape outside. This plan is very different from that described some time since as a combination of iron hoops and staves, and we see nothing unfavorable to its strength and safety. We are informed that a very neat model of this gun, intended for the Patent Office, is in progress, and nearly completed.

Dodge's Improved Boiler.

(*Concluded from No.* 27.)



(This cut shows a section of one of the flues or tubes, with the projection of the flanges or rings which encircle them.)

Having now explained what I believe to be one principal cause of explosions, I shall proceed to illustrate another cause which I believe unites with the one spoken of in occasioning explosions. I refer to the safety valve, which I believe but imperfectly answers the end for which it is intended. A safety valve should operate in such a way as to permit all the steam to escape at a certain degree of pressure, whether the engine be in operation or not, but I am convinced from experiments and observations, that the one now in use does not answer this end; and I will now proceed to give my reasons, which I believe to be founded on scientific facts. And first, it is well known to you, and perhaps to most people, that if a mall pith ball be held at the mouth of a tube from which is issuing steam, and here left, it will remain suspended. I have seen this fact noticed in several scientific works, and attributed to different causes; some have supposed that it was owing to electric attraction, but I do not recollect that any one supposed that it had any effect upon the safety valves of boilers. But as I have a theory, which, if true, proves that it does, I will here give it. Steam is elastic, and after having been compressed, the tendency is to expand in all directions alike, therefore the steam as soon as it gets beyond the end of the pipe or tube expands in all directions, and when the pith ball is held close to the mouth of the tube, the projectile force of the steam is destroyed by coming in contact with the ball, but the tendency to expand from the centre on all sides remains, thereby causing a partial vacuum between the ball and the centre of the orifice and the air pressing against the ball keeps it in its place. And now, why does not this hold true in relation to the safety valve? I believe it does, at least, to such a degree as to render it an unsafe valve practically, rather than a safe one. I admit that it will commence blowing off at the required time, but is that all that is necessary? A valve should let all the steam escape as fast as it is generated above the required pressure; but the valves now in use do not do this, and it is generally testified by engineers who have the charge of boilers at the time of explosions, that the steam rose above the required pressure, although blowing out at the safety valve all the time.—I admit that the one now in use will warn of danger by letting the steam escape at first, but cannot be relied upon to keep the steam down if the usual fire is kept, owing to the fact already explained. A more simple experiment may be tried to illustrate this fact. Let any one take a small tube and place upon the end of it a small card, and then hold another close to it and blow through the tube, when they will find that it is impossible to blow it off; the cause I believe to be the same, the air blown through the tube comes in contact with the second card as it issues from the tube, and being elastic it is reacted upon by the outer card which destroys its projectile force, but owing to its expansive force, it escapes betweenthe ends, thereby creating a partial vacuum between the cards, and the air pressing against the cards will not permit one to be blowoff without the other. The safety valve operates in like manner, only the surface of the valve does not cover as much of the pipe as the outer card does of the inner. The steam as it increases lifts the valve and as soon as the steam begins to escape the valve begins to be affected in the way described, and continues to be in proportion to the presence of the steam. And a valve bearing 20 pounds to the inch would be affected after the steam began to blow out freely, so as to be increased to 30; so that if the boiler were unable to bear 30 pounds to the inch it would burst. I account for this unlooked for effect in this way: steam is elastic and when it strikes the valve it rebounds as it were, but owing to its compressed state it expands sidewise against the air, which not being dense enough to resist the momentum of the steam is forced away before it and the steam having been reacted upon by the weight of the safety valve is now left impelled by its elasticity to escape horizontally from the centre, leaving a partial vacuum under the valve. It may be illustrated in this way: we will suppose that two elastic springs be placed together pointing in opposite directions and then pressed together; then it will be seen upon removing the finger from both springs at once that they will both leap from the centre in opposite directions, and if they were confined in tubes with caps on their ends air tight and then the caps forced towards each other and then permitted to spring back again it is evident that there would be a vacuum formed in proportion to the power of the springs. And now I ask, would not the same result occur in relation to the safety valve. I know that many will be ready to say that the steam in the boiler would be sufficient to destroy this vacuum as fast as created; to such I would say, recollect that it would, were it not for the elastic properties of steam. The steam as it rises in the pipe under the valve after the steam has begun to blow off, strikes the valve with a projectile force and if the valve be weighted with 30 pounds to the inch, it will instead of keeping the valve up for the escape of steam be reacted upon 30 lbs. to the inch. In short, the steam is reacted upon after striking the safety valve, as an electric ball is after having been thrown upon the wall of a building. And any one who will take the trouble to notice the appearance of a safety valve when the steam is blowing off at a pressure of from 15 to 20 pounds to the inch will see that the valve, after having been lifted by the steam, does not remain but opens and shuts in quick succession, the steam all the time above the blowing off point

I present the above considerations respecting the true philosophy of steam boiler explosions, with my improvements, for your investigation, and if they throw any light on this important subject I shall have the satisfaction of knowing that I have been in a measure successful in trying to benefit my fellow men; if not, I can only regret having troubled you with the examination of them.

Very respectfully, yours,

THOMAS A. DODGE.

Nashua, N. H. Feb. 19, 1847.

Improvement in Axles.

A friend to improvement in the Farmer's Cabinet, says: "I have believed that an advantage would result from calling the attention of your numerous readers to an improvement in Axles, which has recently been invented, and which, in my humble opinion, is likely to form a new era in wagon and carriage making. The inventor, Isaac Slack, of Avondale, Chester county, Pa., has secured the invention by letters patent; and, although from the very liberal views of some, we might infer that they would disapprove this course—yet the decided advantages likely to result from the improvement, and the circumstances under which the discovery was made, render in the view of his friends, an ample apology for this course

I will here briefly refer the reader to some of the advantages claimed by the inventor for this construction. And although there is here and there a chance individual, who from prejudice or from other motives, very difficult to appreciate, will strenuously oppose the introduction of this improvement—yet I firmly believe, that every man who has fairly examined it, is in candor, compelled to yield the validity of these pretensions.

1st. The friction is much lessened. The axles revolve with the wheels: each wheel having its separate axle or spindle extending to the centre of the machine; thus the leverage of the spindles is equal to half the length of the ordinary axle, or about two and a half feet, instead of six to twelve inches, as is generally the case. So that by this contrivance the bind or friction on the spindles, occasioned by sideling ground, or side motion, is diminished to less than one sixth part of that exerted in the common hub.

2d. The noise and waste of oil, occasioned by the play of wheels hung by the usual method, is entirely avoided; for, by this improvement, they may at all times be kept free yet so tight as to make no noise in running.

3d. All dust or sand is effectually excluded from the boxes.

4th A wagon constructed on this plan, may be oiled at any time, whether loaded or empty by the simple process of pouring it from a can.

5th. The oil having no access to the out end of the hub, a disagreeable collection of grease and dirt is avoided, and a neat and graceful finish introduced in its stead.

6th. The hub is of cast iron, and subject to no friction, and is therefore almost imperishable. The mortices may be made larger, and the spokes driven tighter, than can be done in wooden ones; and the tenons of the spokes are effectually protected from the oil; thus making a stronger, and a much more lasting wheel.

These are undoubted advantages, which combine in this new construction, to form a compact, simple, neat and durable machine.—I will here add for the satisfaction of any reader feeling an interest in the matter, that several carriages and wagons of different weights are in use, and being made by the inventor in his vicinity; and a reference to which will satisfy any one that the above is in no wise too highly wrought.

Game in Maine.

A Bangor paper states that the number of Moose and Deer killed in the woods this winter is very large, one man killed thirteen deer, just for their skins, worth twenty-five cents each, leaving the carcasses in the woods.

The Prince de Joinville, with a French Squadron consisting of at least eight line of battle ships, will visit New York, it is stated, some time the ensuing summer.

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NEW YORK, APRIL 3, 1847.

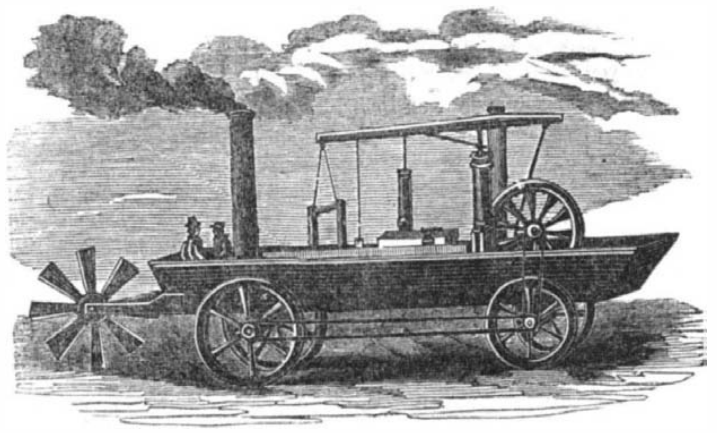
Grafting Fruit Trees.

There is probably no branch in immediate connection with agriculture, more interesting, or more truly scientific, than the art of grafting. Long as this art has been known in its general principle, the art has recently taken an immense advance, and is yet but partially understood, by the most experienced practitioners. That a small twig, or even a bud or a small piece of the tender bark from one tree, being inserted in the branch or stock of another, should grow to be a main branch of the tree, but bearing fruit of the shape, size, color and flavor of that of the tree from which the bud or scion was taken, is of itself a wonder, and would be incredible if it were not common. This art is already so far advanced that a fruit bearing branch is grafted upon the short stump of a nursery tree, so as to constitute a perfect tree in miniature, bearing fruit,—apples, pears, peaches, or plumbs,—though less than 20 inches high. Apples partaking of different kinds,—the sweet and sour flavor, for instance, in different parts, or opposite sides of the same apple, may be produced by splitting longitudinally, the buds of different kinds, and uniting parts of different buds. But we know of no instance in which horticulturists have blended the properties of different kinds, though it evidently might be done without difficulty. Suppose a medium between a large tart apple and a small sweet and spicy kind was desired; it is only requisite to engraft one or more of the *roots* of the one, upon the roots of a young tree of the other kind, or upon those of a youug stump grafted with the other kind. And on this principle carried out, almost any required properties of different kinds may be united in new kinds. As this is the season for grafting, we expect that some of our fruit loving readers will experiment on this mode, not only with fruit but with roses & other shrubs.

Scientific Exchanges.

The forty-first annual report of the N. York Public School Society, just issued, is a document of great interest. One point at least, presented in the report, is on much higher ground than we have often witnessed in school systems. We mean the *practical morals*, founded on *benevolent actions*, recognized in the schools under the direction of this society. A portion of each week is allotted to the preparation of specimens of scientific exchanges. Specimens thus produced have been widely scattered among legislatures, education conventions, schools, and the friends of schools, in this and other countries. They have first secured greatly increased industry, improvement and self respect, in the pupils producing them, and then the unqualified approbation and reciprocating action from professional and official educators, judges, members of Congress, foreign ministers, and other friends of schools in this and other countries. At a late session of the New York Legislature. every member, or nearly so, received from these schools a map of his own county, with several other specimens, which occasioned a public meeting in the Assembly Chamber on the subject, and a unanimous recommendation of the system to all the schools in the State, presented by a circular in the District School Journal, and sent to every superintendent and school in New York. Among the hundred members of Congress, and more, who acknowledged the receipt of specimens, one, from the West, says: "Would to heaven that we could change the exciting scenes we here witness into seeing and reflecting on plans for improving the youth of our country. I shall gladly do every thing in my power to encourage and extend the system recommended, when I return home, whither the beautiful specimens sent me are already forwarded." Another says: "The plan of instruction will and *should* be approved by the patrons of education every where." A Southern member says: "I do not know that I can do my State *better service* than to call their serious attention to this matter." Another: "I feel myself highly honored in being made an instrument for disseminating the valuable improvements suggested." A Circuit Judge of Tennessee says: "It does seem to me the best plan of instruction that could be devised. I most ardently wish it could be introduced into Tennessee." A foreign minister says: "I shall earnestly recommend the plan to institutions and individuals to our country, as eminently calculated to *benefit themselves* by extending their *benefits to others*. A country superintendent says: "It drives the *rod* from the school room."

The First Locomotive---Or Evans' Oructor Amphibolis.



It is with no small degree of pleasure that we present our readers with the above correct drawing of *the first Locomotive*. The locomotive, and also the high pressure engine now so universally used on all the Western steam boats, are purely American inventions. They were were invented by *Oliver Evans*, an individual who possessed a most wonderful originality of mechanical conception, seconded by an untiring perseverance. He was born at Newport, Delaware, in the year 1755.

In 1804 some individuals undertook to ridicule his invention, on account of the slowness with which a clumsy scow in which one of his engines had been placed, was propelled. The inventor silenced them by answering that he would make a carriage propelled by steam for a wager of three thousand dollars, to run upon a level road, against the swiftest horse that could be produced. This machine Evans named the Oructor Amphibolis, and is believed to have been the first application in America of steam power to the propelling of land carriages. Wood, in his treatise on Railroads, says: "It is scarcely necessary to mention that the claim respecting the high pressure steam engine and locomotive engines which the English assert, is entirely without foundation. In early life Mr. Evans sent the drawings and specifications of his inventions to England. They were copied by Messrs. Vivian & Trevithick, without any acknowledgment; they acquired fame and fortune, while the ingenious but eccentric Evans died poor, neglected and broken hearted." Fitch, Fulton and Evans, exhibit a singular coincidence in their history. Posterity will at least render them the tardy recompense of justice. *America, may. therefore, claim the invention of locomotive engines* with even more justice than that of steamboats,—inventions which are destined to revolutionize the commerce and defence of nations."

The Atlantic Dock at Brooklyn.

This is a work of far greater extent and importance than is generally supposed, and is rapidly approaching its completion. $1,000,000 have already been expended upon it, and it is estimated that $2,000,000 more will be required to complete it. It is already however, bringing in a very considerable revenue.—It consists of spacious wharves, enclosing in the form of a square, an area of 40 acres, with an opening on the west front of 200 feet, and a depth of water outside of 28 feet, and inside of 24 feet. The proprietors have already erected 26 large and commodious fire-proof warehouses, three of which are rented by the government. Four more are nearly completed, and 26 others are contracted for. The basin now contains about 300 canal boats, the New York yachts, and about 75 steamers and barges. An Irish vessel, the Ellen Forestal, is now lying there, taking in a cargo of corn for Limerick.

In connection with the dock, other important works are going on. About 100 acres of land have been reclaimed from the sea, and where the tide three years ago rose and fell to a depth of three feet, there are now erected many rows of substantial and elegant dwellings. A steam ferry boat plies between Whitehall and the dock, crossing in about seven minutes, and by this route, as soon as the new avenue to Greenwood cemetery is paved, which will be in about two months, the distance to that place will be much shortened.

Great Bridge.

The Woonsocket Patriot says: "The Boston and Providence Railroad Company are about to build a wooden bridge across the Blackstone river at Central Falls, to connect the Boston and Providence with the Providence and Worcester Railroad. The bridge will be 400 feet long, with four spans."

Astronomical.—Another Planet.

Professor Pierce of Harvard University stated to the American Academy of Arts, at Cambridge, on Tuesday, the 16th ult, that the planet discovered at Berlin and named Leverrier or Neptunus, is not the one which answers to the calculations of Leverrier, nor will it, according to the computations, account for the perturbations of Uranus. The Professor's opinion is founded upon calculations made by Sears C. Walker, Esq., U. S. Astronomer, at the Observatory in Washington, from which it appears that the diameter of the observed planet differs from that of the computed planet, by several times the diameter of the orbit of the earth, and by forty years in the time of its revolution about the Sun. So, then, *the* great planet remains undiscovered. By the way, this reminds us of a laudable movement now going on in Brooklyn for the purchase of a large telescope and the construction of an observatory, at an estimated cost of forty thousand dollars.

A Splendid Periodical.

The April number of the Columbian Magazine, published by Israel Post, 40 Nassau st., is exceedingly rich, being embellished with two superb steel plate engravings,—the "Procession to the Christening" and a view of "New York from Weehawken,"—the latter print is worth 50 cents alone,—besides a plate of Parisian fashions, and the music of "The Fetter neath the Flowers." The reading matter is original and of the first order.

Extraordinary Arrest.

An Irishman named James Malone committed a murder thirty-six years ago in Ireland, and eluded justice by escaping to America.—After living in this country eighteen years, he returned to Ireland, where, after remaining in security for eighteen years more, he has just been identified as the murderer, informed of, and committed for trial. He is now over 70 years of age.

Powder Mill Explosion.

One of the Bronx River Powder Mills at Westchester, was exploded last week, and the fragments of the building were scattered over an extent of two miles. One man was killed and several persons injured.

Several of the leading temperance advocates of Troy have had their houses, offices and signs besmeared with lamp black and tar;—a rum argument.

Extraordinary Adiposeration.

On the occasion of the recent removal of the remains of several persons from their old burying ground, corner of Broadway and 12th sts. a few days since, the coffin of a Mrs. Friend, who had been buried seventeen years, was found to be perfectly sound, while those of her husband and children, since deceased and buried by her side, were totally decayed. The extraordinary weight and appearance of the coffin of Mrs. F., induced her surviving friends, with others in company, to open it when an astonishing spectacle presented itself. The face and neck of Mrs. F., exhibited all the fullness which it possessed in life, and, indeed, the cheeks was somewhat larger, and, with the exception of the absence of the eyes, there was not the slightest appearance of decay. The surface, however, was covered with a thick, filmy white mould, and upon removing it, the skin presented the fairest, purest surface, ever seen on alabaster! The flesh was as solid and hard as the purest sperm, and as perfectly free from disagreeable odor! On further examination her whole person was found to be in the same wonderful state of preservation; body and limbs presented the same hard, undecayed appearance.

The intelligence of this astonishing discovery spread rapidly amongst those who had known Mrs. F., and were acquainted with the family; and it soon reached the ears of some of the medical faculty, who came to see for themselves what, under the circumstances, appeared incredible, and for which they are now wholly unable to account. Even the cap upon her head was but partially decayed, whilst the dark ribbon bows which secured and ornamented it, retained not only their forms but the colors almost as perfectly as when they were placed upon it!

An Ingenious Thief.

A segar dealer in Manchester, England, has been detected in the practice of shoplifting by an improved method. He had long been suspected, and a few days since, he went into the shop of a Mr. Newby, and a watch was fixed upon him. He had entered with a small brown paper parcel under his arm, and this he placed on the counter while he made inquiries about goods. On leaving, he took up his parcel; the shopmen were sure he had taken nothing off the counter but the parcel he put on it, and still there was a box of cigars deficient. Mr Newby, however, seized the mysterious parcel, and the mystery was at once revealed. The parcel was a tin case, a size larger than a cigar box, nicely covered with brown paper, and corded on three sides to resemble a parcel. The fourth side was open, and the shoplifter carried it under his arm, with the open side or mouth downwards, and on entering a shop, placed it over a box of cigars. He was given in charge, and the police, on going to search his shop, found 42 boxes of cigars which had been stolen from Mr. Newby, and 48 boxes stolen from Mr. Nevin, tobacconist, a large quantity of pigtail tobacco, stolen from the shop of Mr. Campbell, and other articles, in all nearly a cart load of goods, and valued at upwards of six hundred dollars.

The Smithsonian College is to be 500 feet long by 100 in width, and the cost is limited to $210,000. James Renwick jr., is to be the architect.

To New Subscribers.

Those subscribing to the Scientific American will be furnished, if desired, with all the back numbers of the present volume. Bound together at the end of the year, they will form a handsome and valuable work.

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FOREIGN CORRESPONDENCE.

LIVERPOOL, Feb. 1847.

Electro Magnetic Telegraph—Plough and Cart—Steam Boilers—New Propeller—Inhalation of Ether, &c. &c.

This is not exactly the season of the year for the chronicling of "new inventions;" nevertheless there are a few items in that line the notice of which may be of some interest to your reader. And first let me notice the exhibition of a newly invented Electro Magnetic Telegraph on Monday last, at the rooms of the Liverpool Literary and Philosophical Society. The telegraph excited great admiration for its astonishing simplicity and effectiveness, the mode of operation being explained by the inventor in person, a Mr. Gamble. The dial-plate has two circles of alphabets, arranged in such a manner, that by means of an index moved by a dead-beat chronometer movement, acted upon by a galvanic battery, words of uncommon use are indicated with great rapidity and unerring accuracy. Each instrument is fitted with a bell, by the sounding of which by the operator at a railway station, the signal man at any other station may be instantaneously notified that his attention is required and the telegraphic communication proceed instantly. The inventor stated an important fact in relation to this telegraph, viz. that it is not affected by sudden changes of temperature and the atmosphere, for he had laid down, as an experiment, a line on the London and Birmingham railway, which had been in operation since August last, during which time there had been severe storms of thunder and lightning as well as sudden changes of temperature from heat to cold, but the instrument had never been out of order for one moment. Experiments were made on two of these beautiful instruments placed at opposite ends of the room, by the inventor,—who stated in concluding his remark, that he had entered into contracts with the government for laying down several lines of his telegraph. The next thing I notice is a patent plough, for laying furrows all in one direction and at the same angle to the right or left alternately as it passes up and down the field thus combining the properties of what is called the turn-rest plough with the advantage of retaining the curved form of the mould board. It is formed with two shears, and the front curves of the mould boards are counterparts of each other, while the hinder parts of the mould boards are formed by a fly, which turning on a centre, alternately presents the continuance of the curve of either the right or left mould board, as required to be used. The handles are attached by a hinge on the centre of the plough, and are the only parts required to be shifted in transposing the direction of the plough, for when the ploughman has completed the furrow turned to the right, all that he has to do is to reverse the handles, and at the same time the draught chain to which the horses are attached is, by the act of their turning, carried on a rod to the opposite end of the plough—the fly on the mould board by its pressure against the soil assumes its correct position, and the instrument is at once in order for turning the furrow to the left, without further adjustment. This plough, it is stated, has been used in competition with two American ploughs, with results decidedly in its favor. its furrows being level and accurate as though cut out by a plane, while the American plough furrows were coarser and more irregular, and its decided advantage in regard to the saving of time in the adjustment. I notice also a new "agricultural cart," possessing some advantages, one of which is the easy method of adjusting the load when descending hills; this is done by a rack and pinion, so that the load is quite under the control of the driver, either for this purpose or for tipping out the load. The pinion is acted upon by a handle, and by the means of a catch or stop the load is kept fast at any required angle. The scientific papers here and in London speak in high terms of a new process for preventing incrustations on steam boilers. The experiments made by the inventor have been entirely successful, but as the plan has not been fully brought before the public, all that I learn of it is, that it effects a large saving of fuel, is perfectly innocuous and can be used with great ease and at a little expense. A new system of propelling vessels, which, it is said, bids fair to do away with both the old paddle wheel and the screw, has been recently invented in France. The blades of the wheel are sections of a parabola, and work under water. "A wonder to many," which is now having its day here, is the "inhalation of ether," which you know is a pure Yankee invention, but having made a decided hit, like Leverrier's planet, every body seems willing to father the discovery, and letters are beginning to appear in the papers here from some of the M. D.'s claiming a "priority o invention." I notice its application in a case of difficult labor of a deformed female "with perfect success," and the remarkable observation made, that while breathing the ether the labor throes continued, and yet the patient was unconscious of pain. And, as there is said to be but one step from the sublime to the ridiculous, I also notice its successful application to a vicious horse a few days since whilst it was being shod, an operation which it was found impossible to perform otherwise. Another wonder of the hour is the great bell just cast in London for a church in Montreal, Canada, the quantity of metal fused for the casting of it being 25 tons. The government have recently made a magnificent donation to a mercantile firm in the whaling interest—the Messrs. Enderbys—no less than a grant of the Auckland Islands in the Pacific ocean, containing 100,000 acres. This group was discovered by one of their ships in 1806. The soil is said to be extremely fertile, without inhabitants, and known to enjoy a delicious climate, and excellent harbors, and there the Messrs. E. propose, under a royal charter, to establish a whaling colony on an extensive scale. I have just room to add, and do so with regret, that we learn from Ireland of the reappearance of the blight in potatoes, the signs being unequivocal. God help poor Ireland!

D. M.

AMESBURY, March 9, 1847.

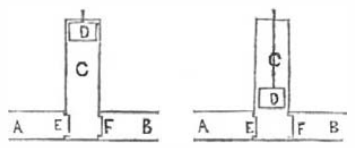
Mr. Editor.

Dear Sir,—Pardon me if I demur a little to your decision upon my propeller. With reference to the trials of which you speak I am ignorant. If they were *fair* experiments and embraced my principle, they will of course stand, let *theory* say what it will. But from your remarks, I doubt whether I made my meaning clear to your mind, and I will try again to do so, with as little repetition as possible.

You know that action and reaction are always equal. This principle you recently applied to gunnery, asserting, truly I think, that the reaction of the gun must be equal to the momentum communicated to the ball. The rocket is one example. Archimedes' revolving sphere is another; and it was, I believe, the first steam engine Barker's water wheel is another.

Now, what I propose to do, is to propel steam boats, and eventually, perhaps, locomotives, and even, possibly, balloons, by *reaction*, or more properly the simple *expansion* of the steam—just the kind of reaction which carries up the rocket,—and dispense with cumbrous shafts, cranks, paddle wheels, &c. To illustrate the principle, take Barker's water wheel. The water is let into the top of an upright cylinder and escapes from apertures in opposite sides of two hollow arms, which are attached horizontally to the bottom of the shaft. I have recently seen in an old book, older than steam boats or than useful steam engines, a description, among other curious scientific experiments, of a little carriage propelled by the reaction of steam. The carriage was made to move very easily upon a level floor. A vessel of water was to be made to boil violently, then quickly placed upon the carriage and an orifice in the side opened. The steam rushing out of the orifice would cause the carriage to move in an opposite direction.

Now, I propose to use this *old* principle miscalled reaction, with various modifications, as I explained in my last—and its *opposite*, which, so far as I know, is entirely new, and with them propel steamboats with greater simplicity, less risk, less room, less cost than can be done in any other method. I must repeat a little here. Suppose this apparatus to be full of water, and the piston D at the top of the cylinder C. Then if F be open and E shut, and the steam be let on to press down the piston D, the water will rush out of B without resistance; but fluids pressing equally



upon all sides, the pressure upon E will be that due to the steam, and will be, if there is any truth in theory, a propelling power. I confess I am unable to see that the *whole* of the pressure of the steam down to the atmospheric point, is not effective power. If not—why not? If it is—why is it not the *best* of all possible methods?

Then let D be at the bottom of C, the steam above D condensed, F closed, and E open.—The rush of water in at A will push D up without resistance. The atmospheric pressure upon F will be a direct propelling power.—The *whole*—except friction. If not—why not? As to the stream being continuous I can see no way to do it without abandoning the principle If, for instance, a series of pistons could be made to go in at A and out at B, the propelling power would be equal to that expended upon the piston. This force would act upon the water in two ways—first in the expulsion of the water *out*—secondly in the suction of the water *in* to A. B. The *sum* of these would be equal to the power expended upon the piston. The suction and expulsion in such case would be nothing more than the *resistance*—like the traction of the railroad, or the water to the steamboat paddle wheel.—The point of propulsion being wherever the power was applied to drive the piston. My plan is totally different. It is not resistance that gives the motive power. But for the fact that the piston would be projected, it would work as well in vacuum as any where. That is, the principle would, a little differently arranged.

Excuse me for this fresh intrusion upon your valuable time. I write to make myself intelligible. This and my other I think will do it. You will perceive that I get the advantages of both a high and low pressure engine, with the utmost simplicity and the slightest cost. The principle which I claim as entirely new, to whatever purpose it may be applied, is, as I have said, the opposite of that which carries up the rocket. To illustrate—suppose after the ignition of the powder in the rocket, the gases could be condensed and form a vacuum. The atmospheric air rushing in to fill it would relieve so much of the external surface on that side from the atmospheric pressure. The other side, being whole, would sustain as much more pressure as is due to the size of the hole, and it would be propelled in the direction of the hole. I think I can turn this discovery to more than one useful purpose. Respectfully yours,

A. L. BAGLEY.

REMARKS ON THE FOREGOING.

We should be sorry to have our correspondent suppose that we did not understand his former description and present theory on the subject of the effects of reaction of fluids; but the fact appears to be, that our answer to a former communication on this subject, was beyond his comprehension. We had not the least intention to intimate a doubt that he would effect a strong propulsive force, on the principles of suction and reaction: but after mentioning that the same principle had been several times introduced, we endeavored to show, (and now repeat) that this mode is attended with a loss of power. To be explicit, we admit that by the act of drawing the water from the prow of a vessel into the receptacle C, a propulsive force is imparted to the vessel, equal to the inertia of the water thus drawn up: but it should not be overlooked that this force is in a measure counteracted by the momentum of the stream of water, acting against the valve F in its progress. Again, we admit that by the expulsion of each quantity of water via the valve F a reaction, equal to the inertia of the water, is exerted on the valve E, tending to propel the vessel forward; but in this instance, a part of the force applied to the water, and expended in overcoming the inertia of the water contained in the tube between the engine and the stern, is counteracted by the momentum of this water sternward at the end of the stroke, when it is restrained by atmospheric pressure. And besides this, there is a part of the power lost in forcing the water by (or past) the sharp angle at E; and moreover, the forward end of the tube itself, will encounter resistance, while the water within remains stationary: and the rear end will also, equally retard the progress of the vessel, by its tendency to produce vacuum. Our respected correspondent may conclude, after reading thus far, that we are determined to discourage him, *at any* rate.—But we hope he will satisfy himself by experiment; and we shall endeavor to show him (and others) very soon—probably next week—a plan by which a *continuous* current of water may be driven from the prow to the stern, without loss of power; and of which he may share a joint interest without expense—ED.

TO CORRESPONDENTS.

"S. C. of C."—The hearing trumpets about which you enquire, have the effect, when constructed on right proportions, to receive, condense, and increase the intensity of sounds, and convey them unbroken to the drum of the ear, enabling deaf persons to hear without difficulty, ordinary conversation. These instruments may be procured in this city for one dollar each, and we know not why they are not used by mariners for the purpose of hearing and distinguishing distant breakers or surfs; or by military scouts, for the purpose of hearing distant music or voices. We have never seen a double ear-trumpet, though it is plain that such an instrument might be constructed, to be adjusted to both ears at the same time, with *more* than double the effect of the single instrument. Suppose a cap—a *hearing* cap if you please,—to be constructed with an ear trumpet attached to each side, and adjusted to the cap by hinge joints in a manner to bring the tubular points to the orifices of the ears; its appearance would be something like the representation cut, and the wearer would be likely to hear sounds from a great distance, and by varying his position, would be enabled to ascertain with accuracy, from what point the sound proceeded.

"H. W. E."—We intend the insertion of your communication, with illustrative remarks as soon as we can make room for it.

"W. F. L."—We will give a descriptive notice of your *Hydrostatic Engine*, if you will furnish $2 for the expense of an illustrative engraving: though we cannot engage to agree with your theory in all points. Your saw-filing machine is much wanted, and would work well; but you will probably meet with much difficulty in procuring circular files suitable for rotary motion. We have often enquired for such, but without success. There would be no difficulty in regulating the gauge. In the application of the screw-key principle for locks, you have been anticipated, but you may hold a patent on the peculiarity of construction and application

"H. S. of S."—We have no intelligence that an engine of the kind you refer to, is anywhere in operation, nor do we understand how any considerable power could be gained or fuel saved by that principle. A single cylinder of sufficient length to accommodate the expansion of the steam, must work as much proportionate power as any of those which have two or more cylinders in which to use the expansive force of steam.

"M. R. of W."—There is something novel in your plan of protecting locomotives, which we have not before considered. Should it prove judicious in its details we think it may be excellent. Please to explain further.

"N. P. B. of K."—Your wind-wheel is of very different construction from any that we have examined. We can say nothing of its power or excellence,—you can readily satisfy

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yourself on that point by experiment. With regard to your lifting pump, it will, of course, work *well*, but we do not understand what advantage it can claim, over those with straight rods. Perhaps you could explain.

"E. T. S. of W. A."—You have no cause of anxiety on account of Mr. B.'s invention. There have been several propellers constructed on the same *main* principle; but that circumstance need not prevent you or B, and several others from holding valid patents on your peculiar modes of application of the principle. Your plan is entitled to the credit of much simplicitly in its connections

"R. M'G. of J."—Of all the immense variety of horse-power machines now in use, it is erroneous to suppose that any one will with the same horse, give any considerable quantity of power more than another, excepting the difference in the friction. Mr. F.'s machine, about which you enquire, is about middling in quality, all points considered, being less expensive and more regular than some others.—But we have frequently seen a horse power machine in operation in this city, (but not patented) the whole cost of which was less than forty dollars;—would accommodate from one to eight horses, and in operation was complete and satisfactory. We can not publish the plan, but will furnish you with a description and drawing (with permission of using) for $5, remitted.

"T. A. of S."—Your oscillating engine appears to be on the same or similar plan with one or more which has been in operation several years;—one at Boston by Baldwin. Your proposed improvement in furnaces may succeed well, but we do not fully understand the application of gas to which you refer. We may write by mail.

"E. C. of P."—The letter &c., to which allusion has been made, cannot possibly be found, though it was probably received at our publishing office. In the multitudes of our correspondence, it is not wonderful if one in a thousand should be mislaid.

"W. S. M. of C."—We shall send you a printed description of the parallel water wheel by mail. The rotary bellows gives a stronger blast in proportion to the power applied, than any other; but one horse power is not considered sufficient for a furnace blast in this vicinity. Probably three horses would be sufficient.

"T. W. of R. B."—We rejoice, *old acquaintance*, in the success of your new and improved saw mill, and think you might readily give us a sufficient description, with some pencil sketches, to enable us to write the specification, and make the full drawing for the Patent Office. But as a model is indispensible, perhaps you can make or procure a model more conveniently than it could be done here. Otherwise, we can procure a model to be made by your description. Write again.

"J. G. of N. H."—Timber cut from September to February proves more durable than that cut in spring or summer.

"H. D. T."—An engraving of your invention will cost about six dollars. We charge nothing for insertion.

"E. B. H. of B."—We must take more time to examine your plan for a rotary engine, and will report our views accordingly. It appears rather complicated at first sight, but we may find excellence enough to counter-balance that apparent objection.

"A (true) Subscriber."—In consideration of having admitted your former communication, we shall insert the last; but we usually decline the insertion of communications without knowing the true name of the author, whether the name is inserted or not.

"S. C. H. of E L."—Your valuable communication is duly appreciated, and will be inserted as soon as we can conveniently procure a suitable engraving. Our artists are pressed with business at present, but the delay will not be long.

"L. B S. of R."—Thanks for your politeness and promptness;—the inventor of the *distance reporter* will eventually sell the machines for $5, but we are not aware that they are on sale at present. We are about to prove the exciting fluid this day

"E. A. B. of B."—We can not afford to give our opinion on each and all of your inventions at present. You will find it difficult to compete with others in improvements in the Æolian. Your improvement is strictly a *melodian*, though somewhat different from the kind in present use. Take it not hard that you have been anticipated in some of your inventions; it is a "very common thing;"—more than half the new inventions prove to be old ones.

"A. H. of B."—Not being accustomed to deal in *gold* in any of its stages or forms, we cannot well judge of the utility of your invention for collecting or retaining it. Should you discover a magnet capable of attracting this metal, we should be pleased to possess one, of the strongest power.

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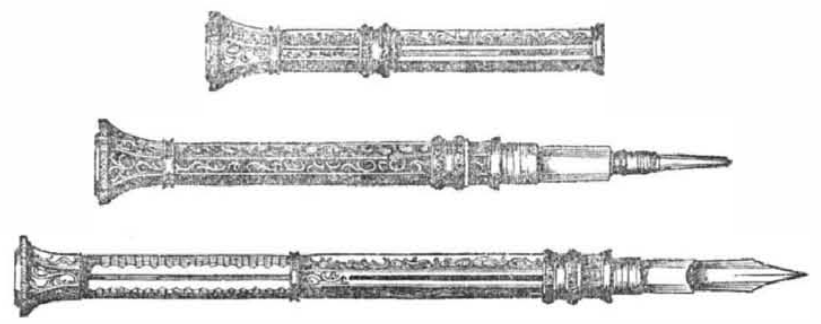

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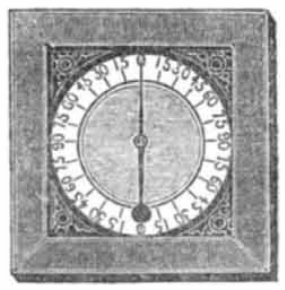

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CURIOUS ARTS

Simple Mode of Printing.

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The Force of Expansion.

The force of expansion in solid, is equal to the mechanical force which would be necessary to produce similar results in stretching or compressing them: thus in a bar of iron heated so as to increase its length a quarter of an inch, by this slow and quiet process, exerts a power against any obstacle by which it may be attempted to confine it, equal to that which would be required to reduce its length by compression, to an equal amount. On withdrawing the heat, it would exert an equal power in returning to its former dimensions. Such a force as this is capable of being applied to a variety of useful purposes, when properly directed; and of producing very destructive effects in constructions of art, when not properly provided against. Few, probably are aware of the fact, that M. Molard, by an application of this force, restored the equilibrium of a building in Paris, the walls of which had been pressed outwards by the incumbent weight.—The same process has since been applied to the restoration of the Cathedral at Armagh, in Ireland.

Experience has taught engineers that it is dangerous to attempt to confine such a force as this, and that it is necessary to make provision for these expansions and contractions, particularly in the metallic constructions which are now so common. In iron pipes for the conveyance of gas and water, when the lengths are very considerable, some of the junctions are rendered moveable, so that by the end of one pipe sliding into that of another, the accidental changes due to temperature are provided for. Even the shoeing of a horse, injurious consequences will follow from neglect or ignorance of this principal. If a horse shoe be aplied in a heated state, the hoof will certainly be injured by its subsequent contraction.

It has been stated by philosophers that the law of expansion by heat, and contraction by cold, is all but universal. There is but one real exception to it known, and this occurs in water. It has been established by the most careful and decisive experiments that water not only expands in the act of passing from the liquid to the solid state; but increases its volume in the act of cooling, some time before it reaches its freezing point. Thus expansion commences when the temperature is reduced to about 40° of Fahrenheit, or eight degrees above the point of congelation, and it increases in an increasing ratio, until the liquid solidifies.

The late Count Leopold Ferri, had arranged a perfect library consisting of 32,000 volumes of works written by female authors exclusively.

THE SWAN FOUNTAIN.

Of this cheap and simple design for a fancy fountain we shall not find much to say. The figure is well represented in the cut, and our readers can as well make up their minds on the subject, without our description as with it.

We are not informed of the cost, but there is no danger that any person will be overcharged for them by the manufacturer, Mr. D. L. Farnam, No. 29 Fulton street.

Improvements in the Construction and Supply of the Hydro-oxygen Blowpipe.

BY ROBERT HARE, M. D.

While a pupil of my predecessor, Doctor Woodhouse, in the year 1801, having observed that a jet of hydrogen when inflamed in atmospheric air, of which only one-fifth is oxygen, was productive of a heat of pre-eminent intensity, I was led to infer that in combining with pure oxygen, the gas, in question, ought to produce a temperature at least five times as great. This led to the contrivance of two modes of producing a jet consisting of a mixture of hydrogen with oxygen. Agreeably to one mode, the gaseous currents meeting like the branches of a river, were made analogously to form a common stream. This object was accomplished by means of perforations drilled in a conical frustrum of pure silver, so as to converge until met by another shorter perforation, commencing at the opposite surface, and so extended as to join them at the point of their meeting. The other mode was that of causing one tube to be within another, so as to be concentric; the outer tube being a little the longer of the two, the latter being employed for hydrogen, the former for oxygen.

In the year 1814, this last mentioned mode was improved, so as to have the means of securing, by adjusting screws, the concentricity of the tubes, and varying the distance of the orifice of efflux of the inner tube from that of the other.

The constructions employed in 1801, were described and published in a pamphlet, and afterwards republished in Tillock's Philosophical Magazine, vol. xiv., and in Annales de Chymie, vol. xiv. At the same time an account was given of the fusion of pure lime and magnesia, and of the fusion of platinum. Subsequently in a paper published in the Transactions of the American Philosophical Society, it was mentioned that I had volatilized platinum.

About the year 1811, Professor Silliman, in a memoir read before the Connecticut Academy of Sciences, gave an account of a series of experiments, in which the experiments which I had performed were repeated, and many additional fusions made. I had adverted to the intensity of the light produced during the exposure of lime to the flame. Alluding to the heat and light, my words were "the eyes could not sustain the one, nor the most refractory substanes resist the other." The intensity of the light was still more insisted upon by Silliman. My experiments were also repeated by Mr. Rubens Peale, during many successive years, at the Philadelphia Museum, for the amusement of visitors.

About the year 1813-14, it was ascertained, at the laboratory of Dr. Parrish, that a bladder being supplied with a mixture of hydrogen and oxygen, in due proportion, and punctured by a pin, while subjected to compression, on igniting the resulting jet, the gas within the bladder did not explode. Of course a burning jet of flame thus created, was found competent to produce, while it lasted, the same effect as when otherwise generated by the same gaseous mixture.

Soon after this result was obtained, Sir Humphrey Davy discovered, that if a lamp flame be completely surrounded by a gauze of fine wire, it may be introduced into an inflammable gaseous mixture without causing it to explode. This was ascribed to the refrigerating influence of the metal, keeping the gaseous mixture below the temperature requisite for inflammation. Hence it was inferred, that if a mixture of hydrogen and oxygen, while condensed within a suitable receiver, were allowed to escape through a capillary metallic tube, so as to form a jet, this might be made to burn without communicating ignition to the portion remaining in the receiver.

By means of an apparatus contrived agreeably to this idea, Dr. Clark of Cambridge, England, repeated the experiments, made many years before by Silliman and myself, without any other reference to ours, than such as was of a nature to do injustice. An exposition of the invalidity of Dr. Clark's pretensions to originality was made in Silliman's Journal for 1820, vol. II., and in Tillock's Philosophical Magazine, for 1821, vol. lvii

The light produced by the hydro-oxygen flame with lime having been observed by Lieutenant Drummond, of the British Navy, was ingeniously proposed by him, as the means of illumination in light houses, and has been in, in consequence, subsequently used as a substitute for the solar rays, in an instrument known as the hydro-oxygen microscope, which is a modification of that which has been called the solar microscope. The name of Drummond light has consequently been given to a mode of illumination, which I originally produced as above stated

The instrument which was used by Professor Silliman and by Rubens Peale, was that above described as having two perforations meeting in one. In this form it was, I believe, employed by Dr. Hope, of Edinburgh, and Dr. Thompson of Glasgow, who both treated it as my contrivance, anteriorly to the publication of Dr. Clark's memoir.

The other form, consisting of two concentric pipes, was modified by a Mr. Mangham, with the view of producing a lime light for the microscope above alluded to. When I saw Mr. Mangham at the Adelaide gallery in 1836, he treated this instrument as mine, in another form. I was surprised afterwards to learn that he had obtained a premium for this modification from the British Society for the Encouragement of Arts, without any allusion to the original inventor. (*To be continued.*)

Baby Jumpers!

The Philadelphians are in a high state of excitement, respecting these newly invented articles. They describe one as follows:—"Imagine a cord fastened to the ceiling, and thence diverging into several cords, which are fastened to a child's frock by attachments to the belt. The cord is elastic, and the child being attached to it, may be left to itself and will find its own amusement in the constant jumping up and down and about, which its movements occasion.

To Remove Stains from Ivory.

If you have any ivory that is stained and wish to take the stain out, make a light paste of sal-volatile, oil, and prepared chalk, and rub on the ivory with leather; afterwards put a little more on and leave it to dry, then brush it off.

The Sense of Touch.

It appears from the experiments of Weber, that the tips of the finger, or the tongue, are capable of appreciating the distance between the points of a pair of compasses which are only one line apart; while the arm or the thigh would confound the two impressions together, even at the distance of thirty lines.

A correspondent of the *Gardener's Chronicle* states that pickling jars buried in the ground, with the neck holes even with the surface, make admirable mouse-traps in gardens. There should be a little water in the jars.

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